A Concrete House With Untreated Surface

BUILT OF GIANT PORTLAND CEMENT

Compliments of the

American Cement Company

SALES AGENTS:

Lesley & Trinkle Co.
Pennsylvania Building
Philadelphia

United Building Material Co.
30 Church St., New York
101 Milk St., Boston

A CONCRETE HOUSE WITH UNTREATED SURFACE

BUILT OF GIANT PORTLAND CEMENT

Compliments of the

American Cement Company

SALES AGENTS:

Lesley & Trinkle Co.
Pennsylvania Building
Philadelphia

United Building Material Co.
30 Church St., New York
101 Milk St., Boston

Grant M. Simon, Architect.

RESIDENCE OF MRS. GASTON DAUS, OCEAN CITY, N. J. BUILT OF "GIANT" PORTLAND CEMENT.

A seashore house with 6-inch reinforced concrete walls which suggests that treatment of an exterior surface is not necessary from the standpoint of structural worth or artistic merit.

PREFACE

Is it possible to construct a 6-inch reinforced concrete wall that will be impervious to moisture? This is an important question constantly asked by architects and builders in all sections of the country.

If an untreated exterior surface may be allowed to stand as it appears when the forms are removed, and hollow walls and lathing and plastering upon the inside are found to be unnecessary, in brief, if a 6-inch wall will answer every purpose in the construction of dwellings of average size, it will mean tremendous economy in future. The feat of building such a house has been accomplished by the use of GIANT PORTLAND CEMENT. How it was done is told in succeeding pages. It may be duplicated by the use of the same durable and uniform brand, namely, GIANT PORTLAND CEMENT. It is with the hope that the whole process of dwelling construction may be improved and simplified that this booklet is published.

AMERICAN CEMENT COMPANY.

A CONCRETE HOUSE WITH UNTREATED SURFACE

[From CEMENT AGE, Feb. 1910]

THE house shown herewith deserves to be termed notable because it is possessed of a feature, which, with possibly few exceptions, has no parallel in any section of the country. We refer to its exterior treatment, or rather entire absence of treatment. The house is the property of Mrs. Gaston Daus, of Philadelphia, and was erected at Ocean City, N. J., a popular and growing resort near Atlantic City. The architect is Mr. Grant M. Simon, of Philadelphia.

The dwelling is a double house planned so as to preserve the outlines and dignity of a large single dwelling without a sacrifice of privacy. It is thoroughly substantial throughout. The construction was entrusted to Carey & Reed, well-known Philadelphia contractors, who have done very important concrete work for the government, various corporations and individuals, and who are now building the reinforced concrete People's Trust Company Building, in Philadelphia. Their supervision of the work assured careful mixing and placing of the concrete, a matter of the most vital importance where water-tight walls are needed.

Careful study of this house, in connection with other known facts relating to concrete construction, should do much to revolutionize the application of concrete in certain types of dwellings.

During the past few years there has been endless discussion concerning proper treatment of concrete surfaces. Volumes have been written and spoken on the subject, and methods of treating surfaces now range from projecting pebbles and stones that suggest a charge of grape-shot fired into a mud wall to painfully smooth and cold exteriors, devoid of life and texture. Between these extremes there are many methods in vogue, including sand-blasting, tool-dressing and the very simple and admirable process devised by Mr. Henry H. Quimby, Bridge Department, Bureau of Surveys, Philadelphia, as applied to the bridges designed by him, which treatment merely consists of scrubbing walls after the initial set has taken place. This method is probably the most economical yet devised, and answers every purpose for massive masonry or bridges, where curved lines and balustrades are to be considered.

In the case of dwellings, however, the prediction is made that our best architects will, ere long, advocate an untreated exterior finish.

The prediction follows the conviction that, in future, untreated walls will not only be recognized as thoroughly typical of concrete construction, and hence a guarantee of structural integrity, but that they will have further

A CONCRETE HOUSE WITH UNTREATED SURFACE

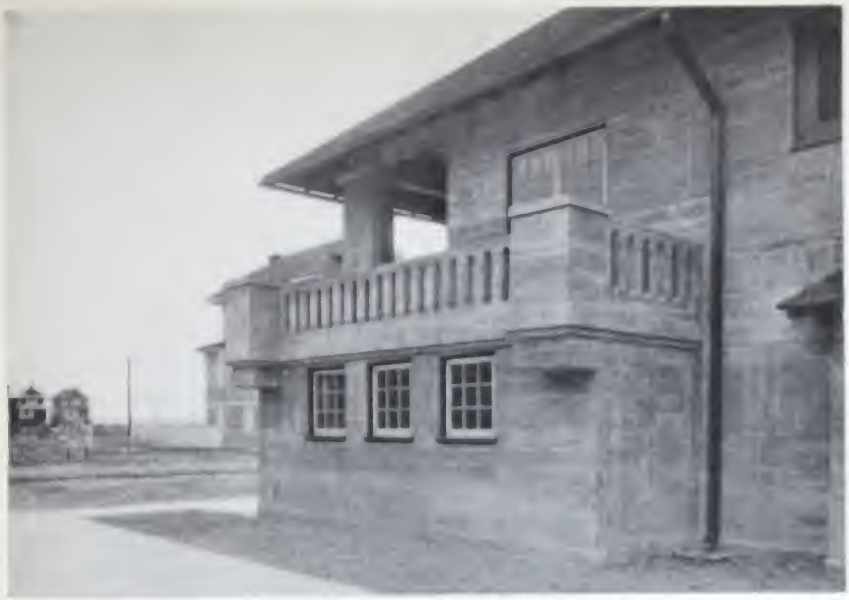

FIG. I.—DETAIL VIEW SHOWING TEXTURE OF WALLS AND SUBSTANTIAL CONCRETE POSTS AND BALUSTRADE OF PORCH.

The large square posts are hollow, with drainage at the bottom, and will be utilized for plants.

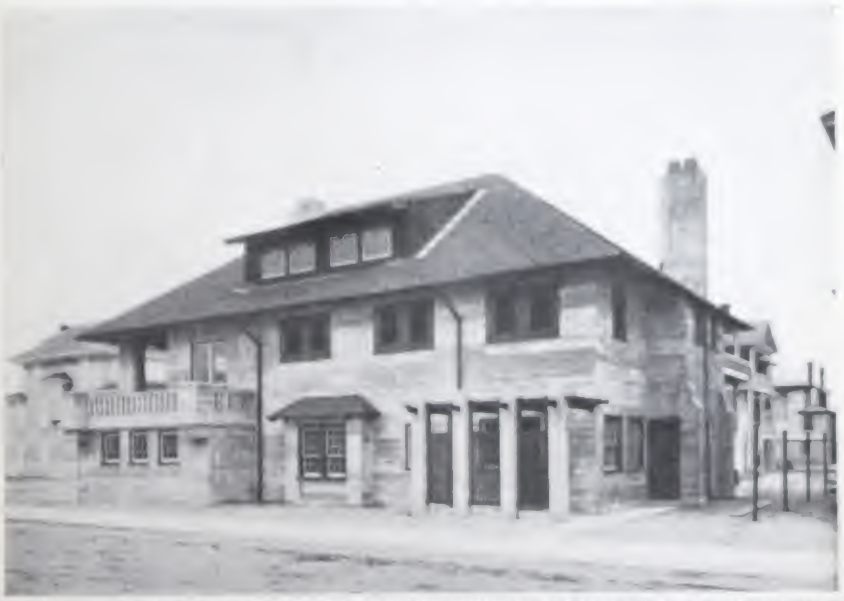

FIG. II.—SIDE AND REAR VIEW SHOWING MASSIVE CHIMNEY CONSTRUCTION AND INTERESTING TREATMENT OF CONCRETE COLUMNS AND GRILL AND REAR ENTRANCE.

value in offering greater resistance to moisture when the thin film of cement is undisturbed. With harmony established in the outlines and other architectural features of a building, a wall of this character will take its place as a durable, fireproof and altogether pleasing part of the house. A few years more and a wall such as is shown in the accompanying pictures will, we believe, be accepted as a standard of excellence. As stated, its structural value is improved by the entire absence of artificial treatment and the artist and architect will come to like it for its honesty and simplicity. Indeed, it is doubtful whether an architect of good taste would, if he could, have the walls of a house hewn out of four massive slabs of granite and set in position. But that is practically what takes place when a concrete wall is tool-dressed. All have seen the jig-saw cottage in the course of construction. There is something pleasing about the ugliest examples before the rough sheathing is covered, especially when the latter has become weather-stained. Then follow the precise clapboards, fresh paint and scroll work, and the house ceases to have any esthetic merit. It is essential that this should happen to make the frame house habitable, but not because of any artistic reason. With the untreated concrete wall there is evolved stability and weather-proof qualities, plus harmony in color and texture. As to the comparison of plain concrete with ordinary brick, stone and frame construction, the pictures of the Ocean City house shows all these types in the background. The texture of the concrete house is certainly more pleasing than in those surrounding it. To sand-blast or tool-dress this house would cost $300 or $400, with nothing gained in the way of durability or impermeability. The latter would unquestionably have been impaired by this treatment. The plastic nature of the material would have been disguised, one of the pleasing attributes of concrete. To have plastered the walls would have resulted in surface cracks and ultimate falling off of the outer coating. In brief, it is difficult to see how any treatment could improve the appearance of the house unless in the direction of even more rude exterior finish obtained by the same natural and direct process, which could be accomplished by the use of rough, unmatched lumber. On this point the architect has stated that were he to build another house of this character he would seek to emphasize this quality.

Therefore, if an honest surface of this character is eventually accepted as entirely appropriate, it will introduce a great saving in time and money. It will mean cheaper lumber for forms. It will do away with outside plastering, tool-dressing, and sand-blasting. It will dispense with the labor and anxiety attending effort to obtain special results in color and texture through carefully selected or exposed aggregates. A wet, dense concrete, carefully spaded, and substantial forms will be the simple process substituted for more complex and costly methods.

But there is another feature of this house quite as important from the standpoint of economy and structural worth as the treatment of its exterior surface. It is the fact that the walls are solid and only 6 inches thick.

FIG. III.—VIEW FROM FRONT PORCH.

Note strong and massive columns of concrete as compared with light timber construction of houses in the background.

The condition of the walls under severe stress of weather indicates that hollow walls are not necessary and that furring and plastering may be eliminated.

This is such a long step in the direction of economy as to be rather startling. Confronted with a vast deal of contradictory data on this subject, and in order to preclude possibility of moisture upon the inside, it was finally decided to furr and plaster the inside walls with the exception of the walls supporting the porch. These walls are exposed to the weather, as in the case of the plastered walls, but have undergone a more severe test owing to the exposed ceiling, which is also the porch floor.

During all the storms of fall and winter these walls, and likewise the ceiling above them, have failed to show the slightest trace of moisture upon the inside.

They are as dry as the furred and plastered walls. During construction, and before the final top coat was put on the porch, a pool of water, confined by rubbish, lay there for a long time. At no time did this water work its way through the unfinished but dense concrete floor, which is also the ceiling of the rooms below. Both rain and snow have fallen in the meantime, and no dampness has appeared. Thus there is reason to believe that even condensation will not take place. There is recalled the testimony

of an architect on this point to the effect that he had dispensed with lath and plaster upon the inside of a 6-inch concrete wall and had put thereon a delicately tinted wall-paper which showed no signs of dampness or other injury after the expiration of six months. There is similar testimony in the case of a stable with 6-inch concrete walls, in which a fire has burned for hours in the harness room without condensation taking place on the concrete wall. This test has been made in extremely cold weather. The low heat conductivity of concrete has been established beyond all doubt, and there is evidence that cold will not penetarate it to the degree that brings about condensation. Poorly made and porous concrete is responsible for its bad name in that respect. Experiments relating to condensation would be well worthy the attention of the U. S. Structural Materials Laboratories. If it is shown that we may have no fear of condensation, and thus dispense with hollow walls and furring and plastering, we have achieved still greater economy in the construction of dwellings. As to decoration of interior surfaces, the money saved by the simple process described would more than pay for materials of good quality and design. These could be applied to inside walls without special preparation of the surface. Doubtless, in many cases, owners would be satisfied with the plain concrete interior.

If, as stated, walls of this character are accepted as a standard type, as in the case of the more common type of brick and stone, there is no question as to the economy that will result from their adoption. From the artistic standpoint they offer suggestions for good design, as in this case, and should appeal to the architect, who, once they become general, will plan the entire house in harmony with the walls. In any event, to try the experiment does not prevent different treatment after the house is constructed. Plaster or tool-dressing may be applied at any time. We are convinced, however, that the latter methods will eventually be abandoned as non-essential from every standpoint. If calling attention to the house in question gives impetus to a movement in that direction, it will have served an excellent purpose. We believe this journal was the first to give publicity to the Quimby process of treating bridges. That brief description went the rounds of the technical press from San Francisco to London. This was due to the merit of the method. It represented economy, common sense and good taste. It is to be hoped that this seashore house will find equal favor and become a pronounced factor in bringing about cheaper and improved methods in the construction of dwellings. It should certainly please the architect, when designing in concrete, to be able to dismiss from his mind all the complex and strained theories that result in what might well be termed fruit cake or nougat surfaces. The contractor could do better and more substantial work and the owner would save hundreds of dollars on a building of the type described.

The building stands at the corner of Atlantic Avenue and Plymouth Place, a choice location near the boardwalk.

The house is 59 by 36 feet and two and a half stories.

A CONCRETE HOUSE WITH UNTREATED SURFACE

FIG. IV.—LIVING ROOM FIREPLACE OF REINFORCED CONCRETE.
The surface was left as it appeared when forms were removed.

The requirements of the house, when first explained to the architect, proved a very difficult problem.

First, the house was to be located, comparatively speaking, in a small seashore town. This meant exposure to the severe storms in winter and the hot sun in summer, together with the continual danger of drifting sand. There was also lack of local skilled labor.

Second, the location of a double house on a corner lot, with building regulations limiting the porch floor height to 8 feet 6 inches and decreasing the ground area by provisions for lawns, made the most economical use of space essential. Of a lot containing 3,750 square feet, only 2,124 square feet were available for actual house area.

Third, it was necessary to keep the cost at a minimum, accepting thorough workmanship and weather-proof qualities as necessary.

Finally, after the most careful study, concrete was chosen as the material answering best these various requirements. As experience has proven, it has stood the severe weather tests even better than was expected. Under able and careful supervision, local labor could be used. This, together with the fixed cost, required simplicity in planning. Whatever esthetic merit the houses possesses lies in the careful window and door arrangement, the quietness of its general design and the beautiful variety obtained *in the natural surface of the concrete.*

The limiting of the first floor ceiling height, as is usual in seashore houses, made it impossible to use the ground floor unless a makeshift and temporary construction was adopted. However, with concrete, by raising the floor level from the living room back to the rear wall, this space was made available not only for a kitchen, laundry and pantry, but also for the dining room, and where the head room is lower for a spare bed room, shower and dressing rooms and space for the hot water boiler. The entire first floor is raised six (6) inches above the ground, there being no cellar.

The dining room is reached directly from the kitchen and from the living room by a stairway, giving the two rooms a feeling of openness. The three bed-rooms and bath on the second floor are directly accessible from the living room, which opens on one side to a covered porch. The third floor, reached by a convenient stairway, contains two large bed-rooms and two large storage rooms. Each house has abundant closet room—an important factor in a seashore house. The shower bath and dressing rooms on the ground floor form a very convenient arrangement for this character of house. They are reached either through the house or directly from the street, the most convenient arrangement for the bather returning from a bath. As these rooms are all of solid concrete, it means the elimination of all possibility of decay through the presence of water.

In general, the trim throughout is chestnut with a dull finish. The rooms are all lighted abundantly with casements, opening out and protected by copper screens and slat shutters. The interior of the walls have a sand plaster finish, and the floors are filled and waxed in natural color.

The two houses have each a separate hot water system (the American Radiator Company). Electric lights give ample artificial illumination throughout the house, and in the kitchen there is a connection for the gas range and one gas-light above it. The houses contain the most modern plumbing system, with fixtures of John Douglas manufacture.

The walls are carried on concrete footings 2 feet wide and 12 inches deep. The footings are reinforced longitudinally and transversely with ½-inch square corrugated bars. At the top of the footing a recess was left to receive the wall. The outside forms for the wall were first erected and the window frames fastened in place. Then the inside forms were erected and the concrete poured. Forms were wired together at intervals of 5 feet in both directions. The concrete was placed one story at a time, but the work was not continuous. When necessary to stop over night construction ceased at an angle so as to avoid a vertical showing joint.

The walls were reinforced with ½-inch square corrugated bars, spaced 12 inches apart vertically and 2 feet horizontally. The vertical bars were left projecting 1 foot above the first story in order that they might serve as an anchorage for the second story walls. The result is a perfect bond and an imperceptible joint. Thorough cleaning of the top of the concrete at the line of the first story was the only precaution taken to insure a perfect bond, except, of course, careful spading. The entire ground floor of the

house is a monolith joined to the footings. Floor sleepers were placed on top of this concrete sub-base and filled between with concrete of a leaner mixture and subsequently covered with the wooden floors.

The party wall is entirely concrete from the ground to the roof. The entrance porch is solid concrete, including the floor, steps and balustrade. It is 9 feet wide, and 8 feet 6 inches above the sidewalk level, havng a return at one side as shown in the picture. A decorative design in Moravian tiles in high relief will be set in the panel shown in the front. Similar decorations will be placed in the panels at the side of the house. The porch is an integral part of the house and built at the same time. The front wall, in a sense, starts at the porch level, being carried on a reinforced concrete beam.

The massive concrete chimneys, a feature which may make or mar a dwelling, were cast with the house, and, like the porch, are an integral part of the house. Flue lining was placed upon the inside and the chimneys capped in red terra cotta. The living room fireplace is shown in an accompanying picture. The surface was left as it appeared when the forms were removed.

The bathrooms have Medusa white Portland cement floors with wainscoating of the same material all in trowel finish. All concrete was a 1:2:4 wet mixture of "Giant" Portland cement, Jersey gravel and ¾-in. trap rock. While the construction was not difficult from an engineering standpoint, it had to be planned with care to carry it out successfully at certain points, for example at the bay window and porch. The same care was used in mixing and spading the concrete thoroughly. Reinforcement was wired in position before the concrete was poured.

The entire structure was carefully designed by the architect co-operating with an appreciative owner and the plans were faithfully executed by the contractor. And last, but not by any means least, it cost less than a house of the same plan in brick or stone in the same location.